Claims

1. A compound of formula I

wherein

R¹, R⁴, R⁸ and R⁷ are independently hydrogen, methyl or ethyl;

R² and R³ are independently hydrogen, or C₁₋₅ alkyl; or

R² and R³ together with the carbon atom to which they are attached form a 5- or 6-membered cycloylkyl ring;

R⁵ is hydrogen, or C₁₋₄ alky;

R⁸ is hydrogen, or branched lower C₃₋₇ alkyl;

 R^9 is hydrogen, methyl, ethyl, or branched lower C_{3-7} alkyl;

R¹⁰ is ethyl or propyl;

R¹¹ is C ₁₋₄ alkyl;

R¹² is hydroxy;

 R^{13} is hydrogen, or C ₁₋₄ alkyl; or

R¹² and R¹³ together with the carbon atom to which they are attached form a carbonyl group;

the dashed line represents either a C-C single bond or no bond; and

 a) when C5 and C8 are connected by a single bond and C9 and C6 are connected by a single bond, C9 and C5 are not connected by a bond,

n=1,

R⁷, R⁸ are hydrogen, and

R⁹ is hydrogen, methyl or ethyl; or

 b) when C5 and C8 are connected by a single bond and C9 and C6 are connected by a single bond, C9 and C5 are not connected,

n=0,

R⁷, R⁸ is hydrogen,

R⁹ is a branched lower C₃₋₇ alkyl; or

c) when C5 and C8 are not connected by a bond, C9 and C5 are connected by a single bond,

R⁷ is hydrogen, methyl or ethyl,

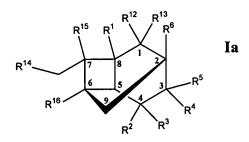
R⁸ is a branched lower C ₃₋₇ alkyl, or

R⁷ and R⁸ together with the carbon atoms to which they are attached form a 5- or 6-membered cycloalkyl ring,

n = 0, and

the bond between C6 and C8 may be a single bond or a double bond.

2. A compound according to claim 1 having a formula la



wherein

R¹, R⁴, R⁶, R¹⁴ and R¹⁶ are independently hydrogen, methyl or ethyl;

 R^2 and R^3 are independently hydrogen, or $C_{\text{1-5}}$ alkyl; or,

R² and R³ together with the carbon atom to which they are attached form a 5- or 6-membered cycloalkyl ring;

R⁵ is hydrogen, or C₁₋₄ alkyl;

R¹⁵ is C₁₋₄ alkyl;

R¹² is hydroxy;

R¹³ is hydrogen or C₁₋₄ alkyl; or

R¹² and R¹³ together with the carbon atom to which they are attached form a carbonyl group.

3. A compound according to claim 1 of formula lb,

wherein

R¹, R⁴, R⁶, R¹⁴ and R¹⁶ are independently hydrogen, methyl or ethyl;

R² and R³ are independently hydrogen, or C_{1.5} alkyl; or,

R² and R³ together with the carbon atom to which they are attached form a 5- or 6-membered cycloalkyl ring;

R⁵ is hydrogen, or C₁₋₄ alkyl;

R¹⁵ is C₁₋₄ alkyl;

R¹² is hydroxy;

R¹³ is hydrogen or C₁₋₄ alkyl; or

R¹² and R¹³ together with the carbon atom to which they are attached form a carbonyl group.

4. A compound according to claim 1 of formula Ic,

wherein

R¹, R⁴, R⁶, R¹⁴ and R¹⁶ are independently hydrogen, methyl or ethyl;

R⁵ is hydrogen, or C₁₋₄ alkyl;

R⁷ and R¹⁴ are independently hydrogen, methyl or ethyl; or,

R⁷ and R¹⁴ together with the carbon atoms to which they are attached form a 5- or 6-membered cycloalkyl ring;

R¹⁵ is C₁₋₄ alkyl;

R¹² is hydroxy;

R¹³ is hydrogen or C₁₋₄ alkyl; or

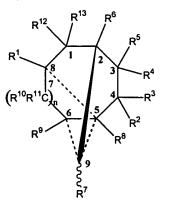
R¹² and R¹³ together with the carbon atom to which they are attached form a carbonyl group; and

the bond between C6 and C8 may be a single bond;

or the dotted line together with the bond between C6 and C8 may represent a double bond.

- 5. A compound according to claim 1 selected from the group consisting of 1,5,7,8,8-Pentamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-one; 1,5,7,8,8-Pentamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-one; 3,3,5,7,8,8-Hexamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-one; 3,3,5,7,8,8-Pentamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-one; 3,3,5,8,8-Pentamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-one; 1-Isopropyl-3,3,5-trimethyl-tricyclo[3.2.1.0^{2.7}]octan-6-one; 5-Isopropyl-1,3-dimethyl-bicyclo[3.2.1]oct-3-en-2-one; 5-Isopropyl-1,3-dimethyl-bicyclo[3.2.1]octan-2-one; 5-tert-Butyl-1,3-dimethyl-bicyclo[3.2.1]oct-3-en-2-one; 5-Isopropyl-3-methyl-bicyclo[3.2.1]oct-3-ene-2-one; 5,7-Diisopropyl-3-methyl-bicyclo[3.2.1]oct-3-en-2-one; 5-Isopropyl-3,7,7-trimethyl-bicyclo[3.2.1]oct-3-en-2-one; 1,3,5-Trimethyl-1,5,6,7,8,8a-hexahydro-1,4a-ethanonaphthalen-2-one; and 5,6,7,8,8-Pentamethyl-tricyclo[3.3.1.0^{2.7}]nonan-6-ol.
- 6. A flavour or fragrance composition comprising a compound as defined according to one of the preceding claims.
- 7. A flavour or fragrance composition according to claim 6 comprising at least one compound selected from the group of compounds of formula la as defined in claim 2 and at least one compound selected from the group of compounds of formula lc as defined in claim 4.
- 8. A flavour or fragrance composition according to claim 7 comprising 5-tert-Butyl-1,3-dimethyl-bicyclo[3.2.1]oct-3-en-2-one and 1,5,7,8,8-Pentamethyl-tricyclo[3.3.1.0^{2,7}]nonan-6-one.

- 9. The use of a compound as defined in one of the claims 1 to 5 in fragrance and flavour applications.
- 10. The use of a compound according to claim 9 in perfumes, household products, laundry products, body care products, and cosmetics.
- 11. The use according to claim 9 and claim 10 wherein a compound is provided in an amount from 0.001 to 20% by weight.
- 12. A method of manufacturing a flavour or fragrance composition, comprising the step of incorporating a compound of formula I as defined in claim 1 to a base material.
- 13. A method of manufacturing a fragranced application, comprising the incorporation of a compound of formula I as defined in claim1.
- 14. A method according to claim 13 wherein the fragranced application is selected from the group consisting of perfume, household product, laundry product, body care product and cosmetics.
- 15. A process of preparing a compound of the formula I as defined in claim 1



comprising the step of reacting a compound of formula II with ethyl aluminium dichloride or methyl aluminium dichloride

I

$$R^{1}$$
 R^{1}
 R^{1}
 R^{1}
 R^{1}
 R^{1}
 R^{1}
 R^{1}
 R^{2}
 R^{3}

wherein

R¹, R⁴, and R⁶ are independently hydrogen, methyl or ethyl;

R² and R³ are independently hydrogen, or C₁₋₅ alkyl; or

R² and R³ together with the carbon atom to which they are attached form a 5- or 6-membered cycloylkyl ring;

R⁵ is hydrogen, or C₁₄ alky;

R⁷ and R¹⁴ are independently hydrogen, methyl or ethyl; or

R⁷ and R¹⁴ together with the carbon atoms to which they are attached form a 5- or 6-membered cycloalkane ring;

R¹⁶ is hydrogen, or lower branched C₃₋₇ alkyl,

and optionally followed by the step of reduction and/or alkylation of the carbonyl group at C1.

16. A process of preparing a compound of the general formula Ic

comprising the step of converting a compound of formula II by photochemical induction

$$R^{1}$$
 R^{1}
 R^{2}
 R^{3}
 R^{3}
 R^{15}
 R^{15}
 R^{14}

wherein

R², R³, and R¹⁶ are hydrogen;

R¹, R⁴ and R⁶ are independently hydrogen, methyl or ethyl;

R⁷ and R¹⁴ are independently hydrogen, methyl or ethyl; or

R⁷ and R¹⁴ together with the carbon atoms to which they are attached form a 5- or 6-membered cycloalkane ring;

R⁵ is hydrogen, linear or branced C₁₋₄ alkyl;

R¹⁵ is linear or branched C₁₋₄ alkyl; and

and optionally followed by the step of hydrogenation across the double bond at C6 and C8, and

optionally followed by the step of reduction and/or alkylation of the carbonyl group at C1.